Kramer Electronics, Ltd.

USER MANUAL

Model:

VP-740

Presentation Scaler / Switcher

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1   Introduction

Welcome to Kramer Electronics (since 1981): a world of unique, creative and affordable solutions to the infinite range of problems that confront the video, audio and presentation professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 500-plus different models now appear in 8 Groups[1], which are clearly defined by function.

Congratulations on purchasing your Kramer **VP-740** *Presentation Scaler / Switcher*, which is ideal for the following typical applications:

- Home cinema central visual switcher
- Presentation
- Educational, industrial, points of sale, churches and other large audience applications

The package includes the following items:

- **VP-740** *Presentation Scaler / Switcher*
- Power cord[2], Null-modem adapter and infra-red remote control transmitter
- This user manual[3]

2   Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high performance high resolution cables[4]

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1 GROUP 1: Distribution Amplifiers; GROUP 2: Video and Audio Switchers, Matrix Switchers and Controllers; GROUP 3: Video, Audio, VGA/XGA Processors; GROUP 4: Interfaces and Sync Processors; GROUP 5: Twisted Pair Interfaces; GROUP 6: Accessories and Rack Adapters; GROUP 7: Scan Converters and Scalers; and GROUP 8: Cables and Connectors

2 We recommend that you use only the power cord that is supplied with this machine

3 Download up-to-date Kramer user manuals from the Internet at this URL: http://www.kramerelectronics.com

4 The complete list of Kramer cables is on our Web site at http://www.kramerelectronics.com

3   Overview

The **VP-740** *Presentation Scaler / Switcher* is a high quality graphics and video scaler, scaling any input format and resolution to a user-defined output resolution.

In particular, the **VP-740** *Presentation Scaler / Switcher*:

- Switches between the sources using FTB™ (Fade-Thru-Black) technology, outputting an extremely high quality image even from a low quality source
- Features 2xCV, 2xY/C, 2xYUV, 1xVGA, 1xDVI-D inputs, and RGBHV, Y, Pb, Pr, and DVI outputs (the DVI inputs/outputs do not support HDCP[1])
- Supports all popular graphics and HDTV output resolutions: 480p (720x483), 576p (720x576), 720p (1280x720), and 1080i (1920x540)
- With its aspect ratio and film-related enhancements, is the perfect companion to any Home Cinema set up
- With the unique Kramer K-IIT™ (image insertion technology), provides a picture-in-picture facility for graphics-into-video and vice versa, as well as video-into-progressive scan component and vice versa
- Uses a universal power supply[2] – 100-240 VAC with automatic voltage selection
- Includes a rear panel 12VDC OUT power connector that can supply 500mA to any machine with a 12VDC power input
- Can output to these resolutions: VGA (640x480), SVGA (800x600), XGA (1024x768), SXGA (1280x1024), UXGA (1600x1200), 720x483, 1280x720, 1920x1080i, 852x480, 1366x768, 1365x1024, 1400x1050, 480p, 576p, 720p, 1080i or User Define[3]

In addition, the **VP-740**:

- Incorporates a unique graphics-scaling engine with image enhancement algorithms, which are built into the firmware
- Is specifically designed to improve video quality by reducing chroma noise
- Digitally reprocesses the signal to correct mastering errors, and regenerates the video at a chosen line and pixel rate format, providing, for example, native-resolution video for LCD, DLP and Plasma displays

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1 High-Bandwidth Digital Content Protection

2 We recommend that you use only the power cord that is supplied with this machine

3 The user definable output mode is recommended for advanced users only – non-standard settings may not be recognized by the display device

- Includes a built-in Picture-in-Picture inserter, letting you insert a video source into a graphics background or vice versa, allowing the user to size and position the shrunken inserted image anywhere on the screen
- Includes an OSD (on-screen display) that superimposes a menu on the screen for making the adjustments. The OSD itself can be adjusted—the OSD size and position, the time out, and whether the OSD status label is displayed
- Includes a front panel SOURCE button that scans the inputs until it locates an active source
- Includes a front panel lock that can be programmed via the OSD menu[1]
- Offers high quality de-interlacing 3:2/2:2 pull down[2]
- Can provide non-linear scaling for 4:3, 16:9 transformation
- Supports firmware upgrade via RS-232
- Includes non-volatile memory that retains the last setting, after switching the power off
- Includes a front panel LCD

Control the **VP-740**:
- From the front panel OSD control buttons
- Remotely, from the infra-red remote control transmitter
- Remotely, via RS-232

To achieve the best performance:
- Connect only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise-levels (often associated with low quality cables)
- Avoid interference from neighboring electrical appliances and position your Kramer **VP-740** away from moisture, excessive sunlight and dust

4   Your VP-740 Presentation Scaler / Switcher

The **VP-740** *Presentation Scaler / Switcher* comes in two versions—an industrial version (illustrated in Figure 1) and an elegant home version (illustrated in Figure 2)—both are defined in Table 1 and Table 2.

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1 See section 8.4.9

2 Accommodates the frame-rate of a converted movie (24 frames per second) to video frequencies (25 frames per second (PAL); 30 frames per second (NTSC)
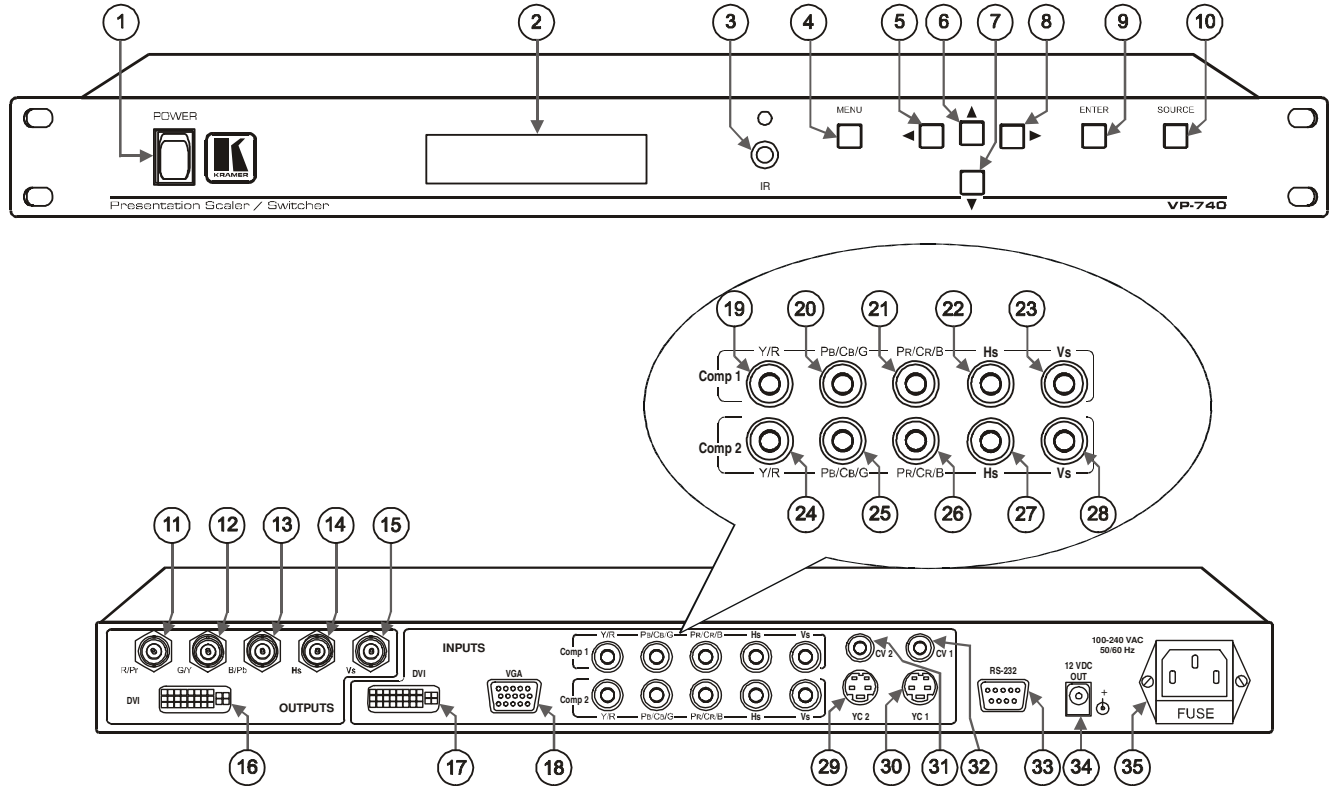
Figure 1: VP-740 Presentation Scaler / Switcher Industrial Version

Figure 2: VP-740 Presentation Scaler / Switcher Home Version

Table 1: Front Panel VP-740 Presentation Scaler / Switcher Features

#	Feature			Function
1	*POWER* Switch			Illuminated switch supplying power to the unit
2	*STATUS* Display			Displays the status (see section 8)
3	*IR* Receiver / LED			Red when the unit will accept IR remote commands
4	*MENU* Button			Displays the OSD Menu screen[1] and locks/unlocks the front panel
		Industrial	**Home**	
5		◄☐	◄	Decreases the range by one step in the OSD screen
6	Scroll Buttons on Version:	▲☐	▲▼	Moves up one step (in the same level) in the OSD screen
7		☐▼		Moves down one step (in the same level) in the OSD screen
8		☐►	►	Increases the range by one step in the OSD screen
9	*ENTER* Button			Moves to the next level in the OSD screen
10	*SOURCE* Button			Scans the inputs until it locates an active source(s)[2]

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1 Or moves to the previous level in the OSD screen

2 AV-1, AV-2, YC-1, YC-2, Comp 1, Comp 2, VGA, or DVI

Table 2: Rear Panel VP-740 Presentation Scaler / Switcher Features

#	Feature		Function
11	OUTPUTS	R/Pr BNC Connector	Connect to the RGBHV acceptor (or the component video acceptor[1])
12		G/Y BNC Connector	
13		B/Pb BNC Connector	
14		Hs[2] BNC Connector	
15		Vs[2] BNC Connector	
16		DVI Connector[3]	Connects to the DVI[4] graphics acceptor
17	DVI INPUTS Connector[3]		Connects to the DVI[4] graphics source
18	VGA INPUTS HD15 Connector		Connects to the VGA (analog interface) graphics source
19	Comp 1 INPUTS	Y/R RCA Connector	Connects to the RGBHV source 1 or component video source 1
20		P$_B$/C$_B$/G RCA Connector	Connects to the RGBHV source 1 or component video source 1
21		P$_R$/C$_R$/B RCA Connector	Connects to the RGBHV source 1 or component video source 1
22		Hs RCA Connector	Connects to the RGBHV source 1
23		Vs RCA Connector	Connects to the RGBHV source 1
24	Comp 2 INPUTS	Y/R RCA Connector	Connects to the RGBHV source 2 or component video source 2
25		P$_B$/C$_B$/G RCA Connector	Connects to the RGBHV source 2 or component video source 2
26		P$_R$/C$_R$/B RCA Connector	Connects to the RGBHV source 2 or component video source 2
27		Hs RCA Connector	Connects to the RGBHV source 2
28		Vs RCA Connector	Connects to the RGBHV source 2
29	YC 2 INPUTS 4p Connector		Connects to the s-Video source 1
30	YC 1 INPUTS 4p Connector		Connects to the s-Video source 2
31	CV 2 INPUTS RCA Connector		Connects to the composite video source 1
32	CV 1 INPUTS RCA Connector		Connects to the composite video source 2
33	RS-232 DB 9 Connector		Connects to PC or Serial Controller
34	12V DC OUT		+12V DC connector for powering another unit
35	Power Connector with FUSE		AC connector enabling power supply to the unit

1 Via the R/Pr, G/Y and B/Pb connectors

2 For RGBS applications, one of the sync channels (Horizontal or Vertical) may be used for the S channel

3 Not HDCP compliant

4 Note that only the digital signal (DVI-D) is available on the DVI (digital video interface) connector

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5 Installing the VP-740 Industrial Version on a Rack

This section describes what to do before installing on a rack and how to rack mount.

| **Before Installing on a Rack** | **How to Rack Mount** |

Before Installing on a Rack

Before installing on a rack, be sure that the environment is within the recommended range:

Operating temperature range	+5 to +45 Deg. Centigrade
Operating humidity range	5 to 65 % RHL, non-condensing
Storage temperature range	-20 to +70 Deg. Centigrade
Storage humidity range	5 to 95% RHL, non-condensing

⚠ **CAUTION!!**

When installing on a 19" rack, avoid hazards by taking care that:

1 It is located within the recommended environmental conditions, as the operating ambient temperature of a closed or multi unit rack assembly may exceed the room ambient temperature.

2 Once rack mounted, enough air will still flow around the machine.

3 The machine is placed straight in the correct horizontal position.

4 You do not overload the circuit(s). When connecting the machine to the supply circuit, overloading the circuits might have a detrimental effect on overcurrent protection and supply wiring. Refer to the appropriate nameplate ratings for information. For example, for fuse replacement, see the value printed on the product label.

5 The machine is earthed (grounded) in a reliable way and is connected only to an electricity socket with grounding. Pay particular attention to supply connections other than direct connections to the branch circuit (for example, the use of power strips), and that you use only the power cord that is supplied with the machine.

How to Rack Mount

To rack-mount the machine:

1 Attach both ear brackets to the machine. To do so, remove the screws from each side of the machine (3 on each side), and replace those screws through the ear brackets.
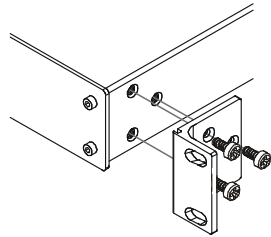
2 Place the ears of the machine against the rack rails, and insert the proper screws (not provided) through each of the four holes in the rack ears.

Note that:

• In some models, the front panel may feature built-in rack ears

• Detachable rack ears can be removed for desktop use

• Always mount the machine in the rack before you attach any cables or connect the machine to the power

• If you are using a Kramer rack adapter kit (for a machine that is not 19"), see the Rack Adapters user manual for installation instructions (you can download it at: http://www.kramerelectronics.com)

6   Connecting the VP-740 Presentation Scaler / Switcher

Using the **VP-740** you can select any one of the 8 inputs and scale that input to the output at the desired resolution.

To connect the **VP-740**, as the example in Figure 3 illustrates, do the following[1]:

1. Connect two composite video sources (for example, composite video player 1 and composite video player 2), to the CV 1 and CV 2 INPUT RCA connectors respectively.

2. Connect two s-Video sources (for example, s-Video player 1 and s-Video player 2), to the YC 1 and YC 2 INPUT 4p connectors respectively.

3. Connect an RGB or component video[2] source to the three Comp 2 INPUT RCA connectors[3] Y/R, P_B/C_B/G, and P_R/C_R/B. For example:
    -   An RGB camera to Y**/R**, P_B/C_B**/G**, P_R/C_R**/B OR**
    -   A component video player to Y/R, P_B/C_B/G, P_R/C_R/B

4. Connect a computer graphics source to the VGA INPUT HD15 connector.

5. Connect a DVI (digital video interface) graphics source, to the DVI INPUT connector (not HDCP compliant).

6. Connect the five BNC OUTPUT connectors: R/Pr, G/Y, B/Pb, Hs, and Vs, to a video acceptor (for example, a plasma display).

7. Connect the DVI OUTPUT connector (not HDCP compliant) to a video acceptor (for example, a projector).

8. Connect the power cord[4] (not illustrated in Figure 3).

9. Connect a DC power plug (optional) from another Kramer unit[5] (that requires a 12VDC power input) to the 12VDC OUT connector.

10. Connect a PC (optional), as section 6.1 describes.

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1 Switch OFF the power on each device before connecting it to your VP-740. After connecting your VP-740, switch on its power and then switch on the power on each device

2 Y/R, Pb/Cb/G, Pr/Cr/B is also known as Y, B-Y, R-Y, or YUV or Y, Pb, Pr

3 The Comp 1 and the Comp 2 INPUTS RCA connectors are interchangeable. You can connect two RGBHV sources, an RGBHV source to Comp 2 as well as to Comp 1; or two component (or RGB) sources, to Comp 1 as well as to Comp 2

4 We recommend that you use only the power cord that is supplied with this machine

5 For example, the Kramer FC-15
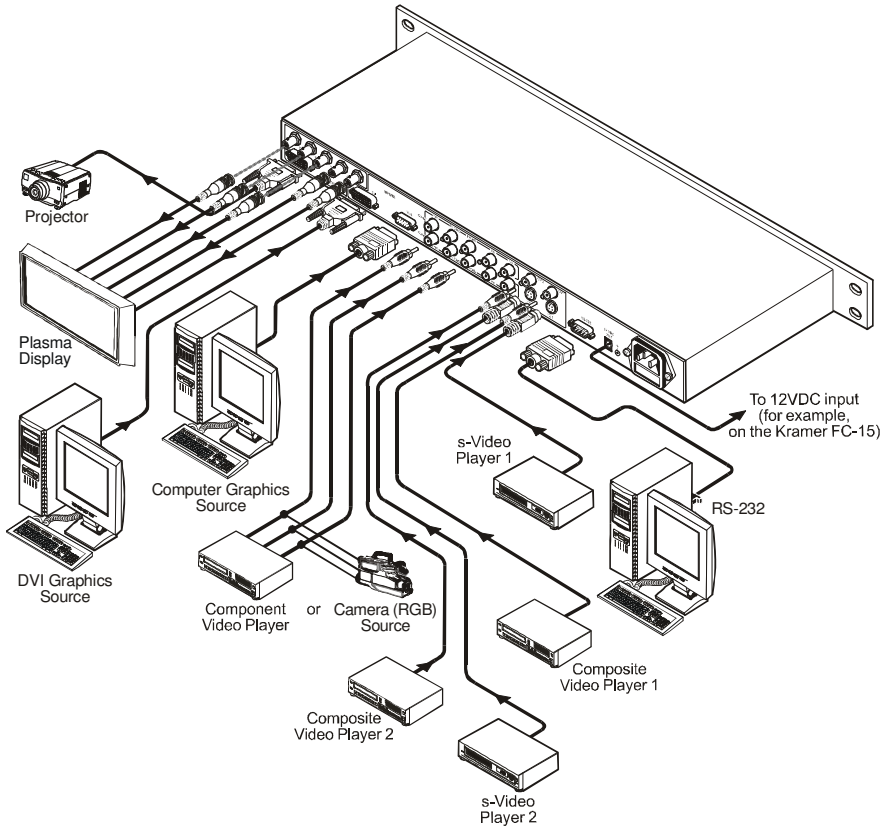
Figure 3: Connecting the VP-740 Rear Panel

6.1 Connecting a PC

You can connect a PC (or other controller) to the **VP-740** via the RS-232 port for remote control, and for upgrading the firmware.

To connect a PC to a **VP-740** unit, using the Null-modem adapter provided with the machine (recommended):

* Connect the RS-232 DB9 rear panel port on the **VP-740** unit to the Null-modem adapter and connect the Null-modem adapter with a 9-wire flat cable to the RS-232 DB9 port on your PC

To connect a PC to a **VP-740** unit, without using a Null-modem adapter:

* Connect the RS-232 DB9 port on your PC to the RS-232 DB9 rear panel port on the **VP-740** unit, forming a cross-connection[1], as Figure 4 illustrates
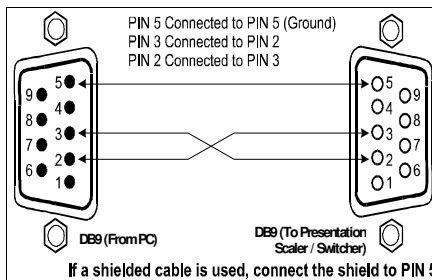
Figure 4: Connecting the PC

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1 Also known as a Null-modem connection

7 Understanding the PIP Feature

The Picture-in-Picture inserter (PIP) is used for the simultaneous display of video and graphic sources, and lets you display:

- An inserted video source[1] PIP over a graphic source[2]
- An inserted graphic source[2] PIP over a video source[1]

Your Presentation Scaler / Switcher automatically recognizes and displays only the relevant sources, as the following two examples illustrate:

- Choosing the AV 1 PIP source when the VGA input is selected, will insert the composite video source over the VGA graphic displayed on the screen. You can choose a component, YC 1, YC 2 or AV 2 PIP source[3] (instead of the AV 1). You cannot choose VGA or DVI[4]
- Choosing the VGA PIP source when the AV 1 input is selected, will insert the VGA graphic source over the composite video displayed on the screen. You can choose a VGA or DVI PIP source[3] (instead of the VGA). You cannot choose AV 2, YC 1, or YC 2[5]

7.1 Activating the PIP Feature

To turn ON the PIP, do one of the following:

- Switch on the PIP functionality via the OSD Menu (see Figure 27)
- Press the PIP key on the remote control transmitter (see Figure 44)

When the Label is ON[6] (see Figure 31), the PIP is enclosed by an orange frame, and the OSD PIP status appears superimposed over the top right corner of the screen for a few seconds, as Figure 5 illustrates. After a few seconds[7], the orange frame and the OSD PIP status automatically disappear[8].

Activating the PIP subsequently cycles between the PIP with the orange frame and no PIP.

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1 That is, composite, s-Video or component video (interlaced)

2 That is, DVI, VGA or progressive component video

3 As long as it is connected and switched on. Otherwise, choosing it will display a blank screen

4 As these are graphics sources and you cannot insert a graphics PIP over a graphics source

5 As these are video sources and you cannot insert a video PIP over a video source

6 The information prompt will appear while you change the source or adjust the image. For example, you can resize the PIP via the infra-red remote control transmitter (see section 7.3)

7 By default, 20 seconds. But you can reset the timeout (from 3 to 60 seconds)

8 Trying to activate the PIP again while the PIP is still enclosed by an orange frame deactivates the PIP

Enlarged View

PIP	
Source:	VGA

Inserted
graphic
appears in
this area
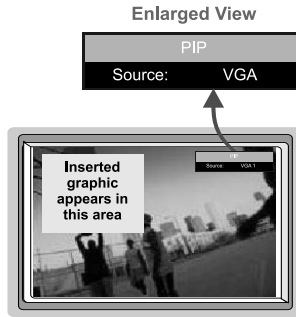
Figure 5: OSD PIP Status

7.2 PIP Characteristics

You can determine the following PIP characteristics:

- PIP Source
- PIP Size (1/4, 1/9, 1/16, 1/25, Split or User Define)
- Horizontal and Vertical position, placing it anywhere on the screen

7.3 Resizing the PIP

To resize the PIP (1/4, 1/9, 1/16, 1/25, Split or User Define):

- When the Label is ON and the PIP is enclosed by an orange frame, press the Up and/or Down DIRECTION keys on the infra-red remote control transmitter or the *UP* and/or *DOWN* front panel scroll buttons
- Use the OSD Menu buttons

7.4 Moving the Position of the PIP

To move the location of the PIP:

- When the the orange frame and the OSD PIP status automatically disappear [1], press the Up, Down, Left and/or Right DIRECTION keys on the infra-red remote control transmitter or the *UP, DOWN, LEFT* and/or *RIGHT* front panel scroll buttons
- Adjust[2] the H-Position and/or V-Position in the PIP Utility Settings OSD Menu (see section 8.4.3), using the remote control transmitter or the front panel OSD buttons

---

1 Label and frame disappear according to the Time Out Setting in the utilities Menu (see section 8.4.5)

2 Adjustment range is between –32 and +32 (default is –31)

7.5 Locking and Unlocking the Front Panel

You can lock the front panel[1] and control from the infra-red remote control transmitter to safeguard the settings on the **VP-740**.

To lock the front panel completely (none of the buttons are active):

- Press and hold the *MENU* front panel OSD button or the MENU key on the infra-red remote control transmitter for a few seconds, until the Key Lock On OSD status appears superimposed over the top right corner of the screen for a few seconds[2], as Figure 6 illustrates

Figure 6: Locking / Unlocking the Front Panel

You can also:

- Lock the front panel, but keep the SOURCE button on the front panel and the source selection buttons on the IR control transmitter active – while the remaining machine functions are locked (see section 8.4.9)
- Keep the machine locked[3] after cycling the power (see section 8.4.9)

To unlock the front panel (releasing the protection mechanism):

- Press and hold the *MENU* front panel OSD button or the MENU key on the infra-red remote control transmitter for a few seconds, until the Key Lock Off OSD status appears superimposed over the top right corner of the screen for a few seconds[2]

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1 However, operation via RS-232 serial commands (remote controller or PC) is still available
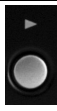
2 By default, 20 seconds. But you can reset the timeout (from 3 to 60 seconds)

3 That is the front panel and the IR control transmitter remain locked

8 Operating the VP-740 via the OSD MENU Screen

You can control the Presentation Scaler / Switcher from the:

- Front panel OSD MENU and ENTER control buttons
- Front panel OSD Scroll buttons:

Industrial Version:	◄☐	☐►	▲☐▼	☐▼
Home Version:				

- Infra-red remote control transmitter MENU key and DIRECTION keys (see section 8.6)
- RS-232 remote control

The **VP-740** also includes a front panel SOURCE button that scans the inputs (AV-1, AV-2, YC-1, YC-2, Comp 1, Comp 2, VGA, and DVI) until it locates an active source.

You can switch seamlessly[1] between each input[2] that is connected to a source, by pressing the front panel SOURCE button. The OSD status appears superimposed over the top right corner of the screen for a few seconds. Each of the five OSD screens has its distinctive icon[3], which is highlighted orange when selected[4] (defined in Figure 7). In addition, the appropriate setting is also displayed on the front panel STATUS display (for example, "Menu" followed by "Image Tuning" on the line below, when the Image Tuning OSD screen is selected).

Image Tuning   Geometry   Source Selection   Utility   Save and Load

Figure 7: OSD Screen Icons

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1 For glitchless transitions between inputs

2 To set the image transition speed (fast, safe or moderate), see section 8.4.4

3 Each icon represents a Level 1 function. In addition to Level 1, the OSD structure includes Level 2 (a subset of level 1),

Level 3 (a subset of level 2), Level 4 (a subset of level 3)

4 In addition the name of the selected OSD screen appears in the top left. For example, "Image Tuning" in Figure 8

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Use the OSD Menu as follows:

- Press the MENU front panel OSD button or the MENU key on the remote control transmitter (see Figure 44) to display the first OSD screen

- Press the MENU front panel OSD button or the MENU key on the infra-red remote control transmitter (see Figure 44), to move to the previous level in the OSD screen (Esc.)

- Press the up or down arrow buttons to select the menu icons and press ENTER to confirm the selection

- Use the right and left arrow buttons to increase and decrease the numerical rates (where relevant)

8.1 The Image Tuning Menu Screen

The "Image Tuning" menu screen (see Figure 8) lets you adjust the brightness[1], contrast[1], saturation[1], hue[1] and sharpness[2].
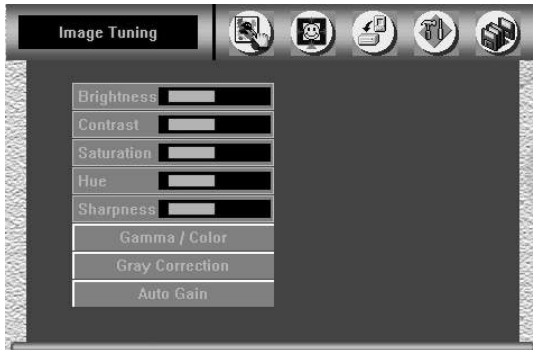
Figure 8: First OSD Screen: the "Image Tuning" Menu Screen

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1 Adjustment range is between –32 and +32 (default is 0)

2 Adjustment range is between –8 and +8 (default is 0)

8.1.1 The Gamma / Color Screen

Figure 9 illustrates the Gamma[1] / Color Screen[1].
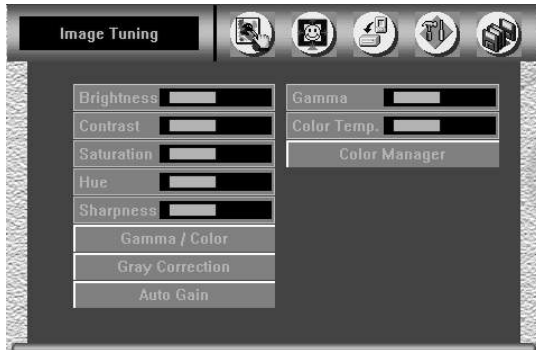
Figure 9: Gamma / Color Screen

Choosing Color Manager illustrated in Figure 9, lets you adjust the red, green, blue and yellow (see Figure 10).
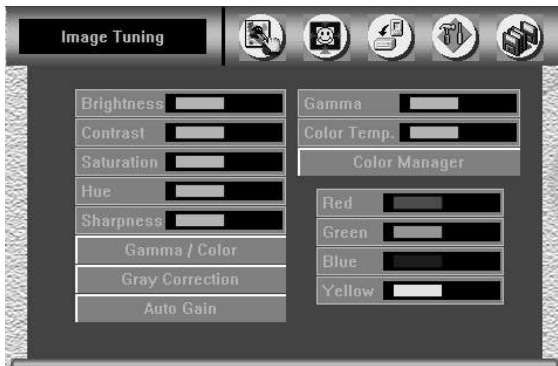
Figure 10: Color Manager Screen

1 Adjustment range is between –10 and +10 (default is 0)

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8.1.2   The Gray Correction Screen and Auto Gain

Choosing Gray Correction[1], lets you correct the gray color by adjusting the dark red, dark blue, light red, and light blue colors (see Figure 11).
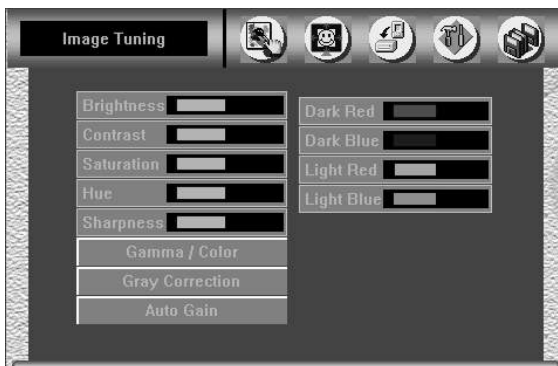
Figure 11: Gray Correction Screen

Choosing the Auto Gain[2] button lets you automatically adjust the brightness and contrast.

8.2 Controlling the Geometry

Figure 12 illustrates the Geometry Screen.
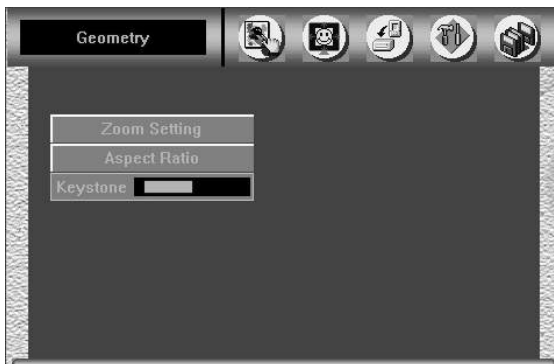
Figure 12: Geometry Screen

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1 Adjustment range is between –32 and +32 (default is 0)

2 Available for graphics sources only

Figure 13: Geometry – Zoom Setting Screen

You can adjust the zoom ratio to up to 400% via the OSD Menu buttons and also adjust H – Pan and V – Pan[1] (see Figure 14).
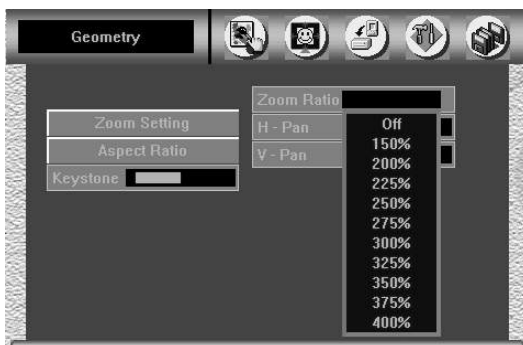
Figure 14: Geometry – Zoom Ratio Screen

Figure 15 to Figure 19 (inclusive) illustrate the Geometry Aspect Ratio screens. Set the following characteristics according to your specific requirements: anamorphic (displays the aspect ratio (usually 16:9)), virtual wide (anamorphic plus non-linear scaling), letterbox[2] (the vertical line is expanded to full screen[3]—it is assumed that there are two bands of black, top and bottom of the screen), native (lets you set the native resolution according to the specifications of the Plasma screen or projector), 4:3 output[4] (the length to height ratio is 4:3), and user define[4] (H-Zoom, V-Zoom, H-Pan, and V-Pan).

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1 Adjustment range is between –64 and +64 (default is 0)

2 Adjustment range is between –32 and +32 (default is 0)

3 Panning the picture refers to resizing and cropping it

4 Adjustment range is between –32 and +32 (default is 0)
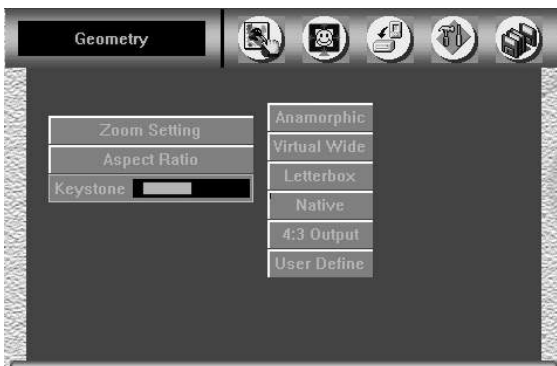
Figure 15: Geometry Aspect Ratio Screen
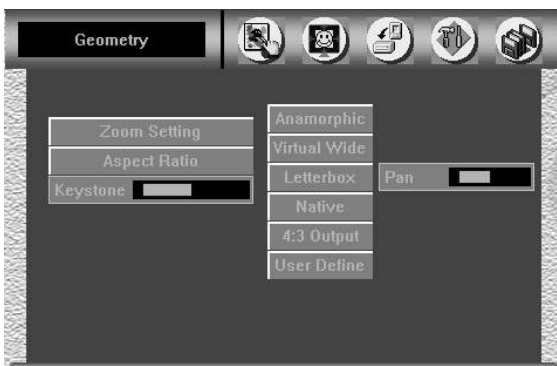
Figure 16: Geometry Aspect Ratio Letterbox Pan Screen
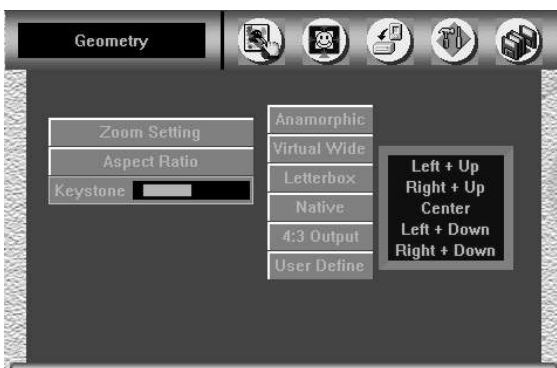
Figure 17: Geometry Aspect Ratio Native Screen
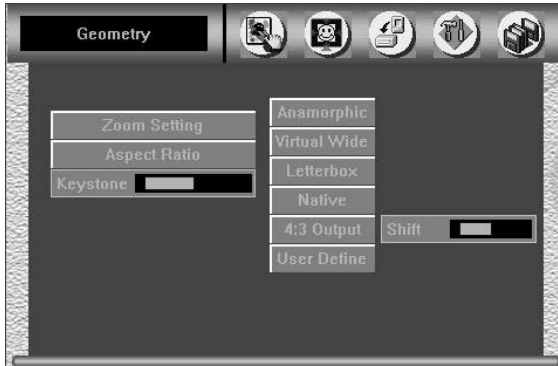
Figure 18: Geometry Aspect Ratio 4:3 Output Shift Screen

You can set the user define[1] according to your specific requirements:
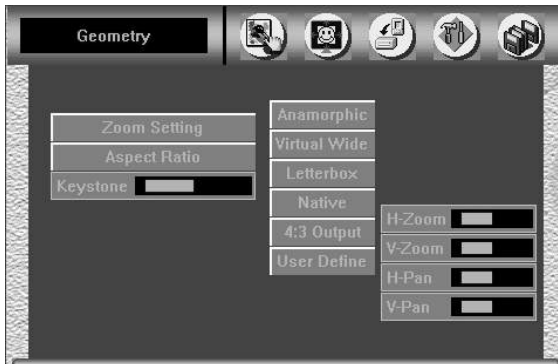
Figure 19: Geometry Aspect Ratio User Define Screen

You can adjust the Keystone[1] (to keep the picture rectangular) according to your specific requirements.

8.3 Selecting the Source

Figure 20 illustrates the Source Selection screen, displaying the active source, as well as facilitating changing of the source.

---

1 Adjustment range is between –32 and +32 (default is 0)
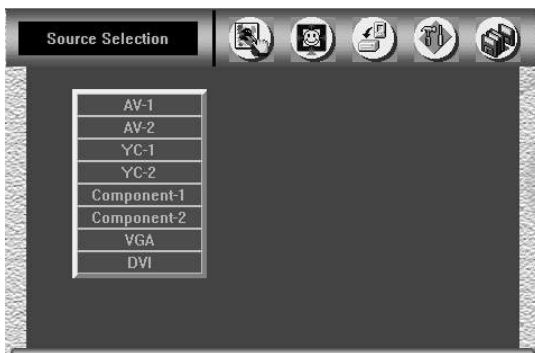
Figure 20: Source Selection Screen

Alternatively, you can select a source using the front panel SOURCE button (which scans the inputs until it locates an active source) or the appropriate infra-red remote control transmitter keys.

8.4 Configuring via the Utility Screens

You can determine how your **VP-740** will function via the Utility screen.

8.4.1   Choosing the Video Setting Utility

Video Setting is automatically displayed when one of the following sources is selected:

- Composite[1]
- s-Video
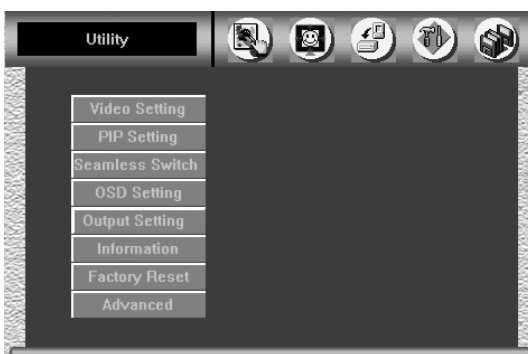
Figure 21: Video Setting Utility Screen (Composite or s-Video Source)

---

1 As the information screen in Figure 36 illustrates

21

Figure 22 displays the Video Setting characteristics that include: Horizontal Start[1], Vertical Start[2], Noise Reduction[3] and Chroma Delay[4]. The Video Setting menu also lets you select the Color Format (Default, RGB or YUV) and the Film Mode[5].
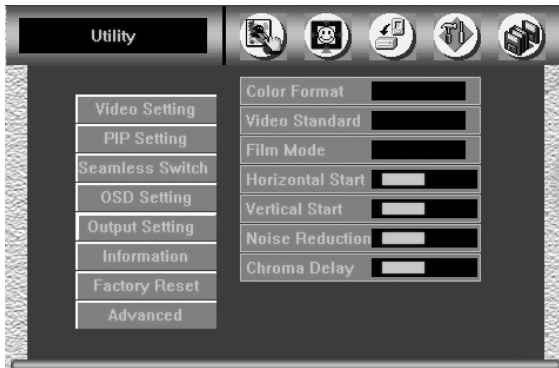
Figure 22: Video Setting Utility Screen

Figure 23 displays the Video Standard Video Setting:
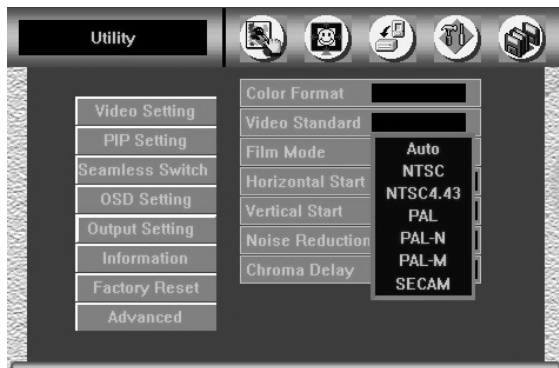
Figure 23: Video Standard Video Setting Utility Screen

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1 Adjustment range is between –15 and +15 (default is 0)

2 Adjustment range is between –19 and +19 (default is 0)

3 Adjustment range is between –16 and +16 (default is 0)

4 Adjustment range is between –4 and +3 (default is 0)

5 Select On for 3:2 or 2:2 pulldown

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8.4.2 Choosing the **PC Data** Utility

PC Data is automatically displayed when one of the following sources is selected:

- Component
- VGA
- DVI
- HDTV
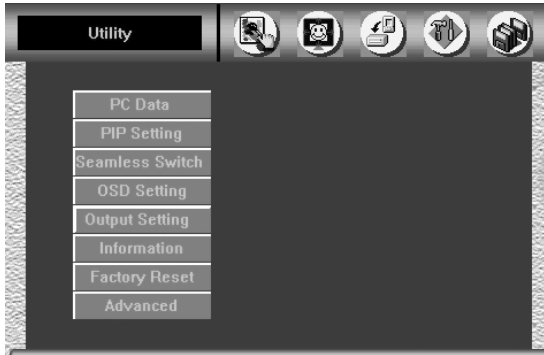
Figure 24: PC Data Utility Screen (Component, VGA, DVI or HDTV Source)
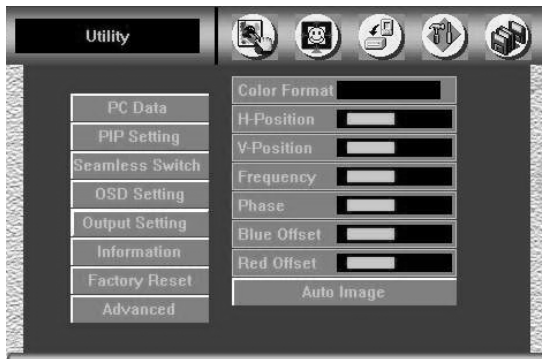
Figure 25: PC Data Utility Screen

Figure 26 displays the PC Data Color Formats (H-Position and V-Position have an adjustment range between –64 and +64 (default is 0)):
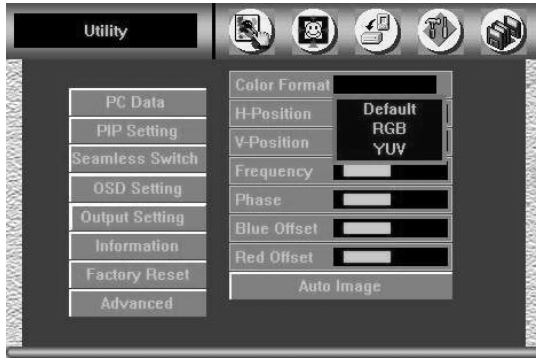
Figure 26: PC Data Utility Color Formats Screen

The PC Data menu also lets you set the frequency[1], Phase[2], Blue Offset[3] and Red Offset[3]. Auto image automatically sets the H-Position, V-Position, Frequency and Phase.

8.4.3   Choosing the PIP Settings Utility

From the PIP Setting Utility screen, you can activate the PIP (see Figure 27), and choose the source (see Figure 28), the size (see Figure 29) and the position[4] of the PIP.
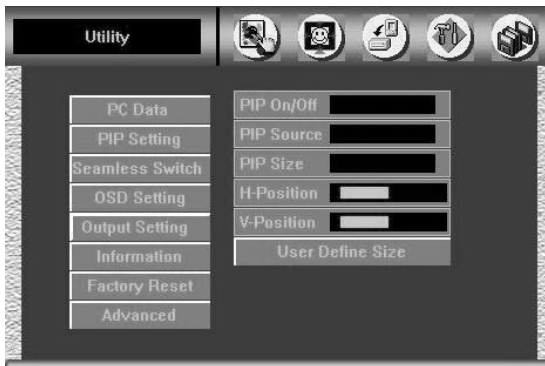
Figure 27: PIP Setting Utility On/Off Screen

---

1 Frequency has an adjustment range between –64 and +64 (default is 0)

2 Phase has an adjustment range between –16 and +16 (default is 0)

3 Adjustment range is between –32 and +32 (default is 0)

4 H-Position and V-Position have an adjustment range between –32 and +32 (default is 0)
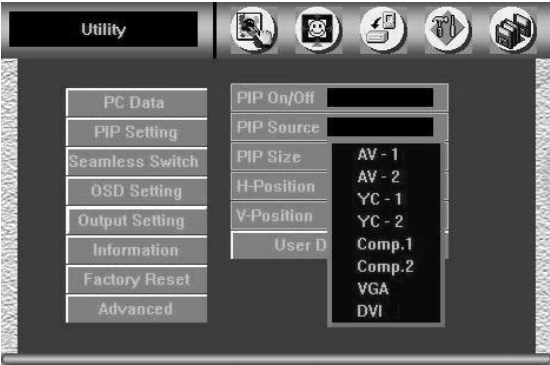
Figure 28: PIP Source Setting Utility Screen
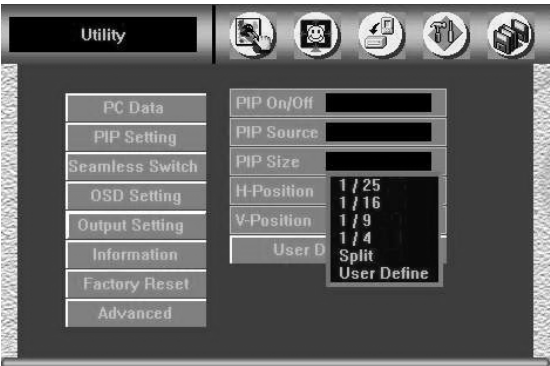
Figure 29: PIP Size Setting Utility Screen

8.4.4   Choosing the Seamless Switch Utility

From the Seamless Switch Utility screen (see Figure 30), you can choose a fast[1], safe[2] (takes longer than fast) or moderate (between fast and safe) image transition speed:
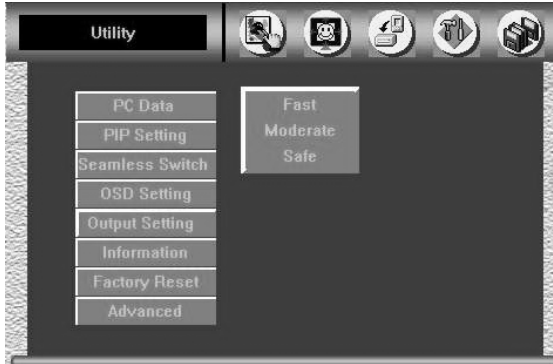
Figure 30: Seamless Switch Utility Screen

8.4.5   Choosing the OSD Setting Utility

From the OSD Setting Utility screen you can set the OSD position[3], time out[4], and whether the label is displayed or not.
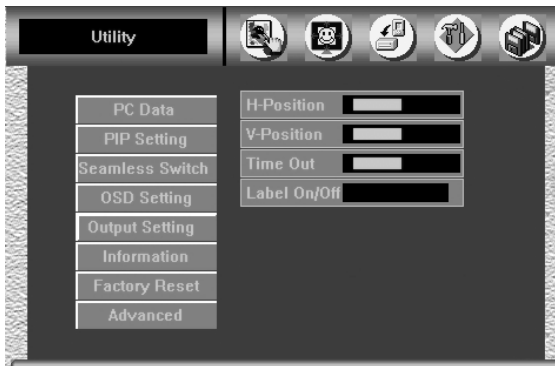
Figure 31: OSD Setting Utility

---

1 An immediate switch, without checking the resolution. However, the image transition may appear unstable

2 A smooth image transition (the input resolution at the input is checked and outputted after a few seconds delay)

3 H-Position and V-Position have an adjustment range between –32 and +32 (default is 0)

4 Range (in seconds) is between +3 and +60 (default is 20)

8.4.6 Choosing the Output Setting Utility

From the Output Setting Utility screen you can adjust[1] the resolution (see Figure 32) and—if the OSD status label is enabled—the OSD status appears superimposed over the top right corner of the screen[2] for a few seconds[3]:
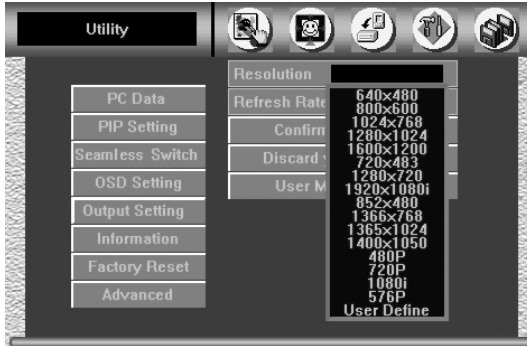
Figure 32: Output Setting Resolution Utility Screen

Figure 33: OSD Output Status

From the Output Setting Utility screen you can also adjust[4] the refresh rate (see Figure 34) and a user definable output mode[5] (see Figure 35 and Table 3).

---

1 Each adjustment requires confirmation: select " Confirm the setting" and press Enter. To cancel an adjustment, select "Discard your changes" and press Enter

2 Adjusting the output resolution results in a corresponding adjustment to the size of the OSD status window

3 By default, 20 seconds. But you can reset the timeout (from 3 to 60 seconds)

4 Each adjustment requires confirmation: select " Confirm the setting" and press Enter. To cancel an adjustment, select "Discard your changes" and press Enter

5 Recommended for advanced users only – non-standard settings may not be recognized by the display device
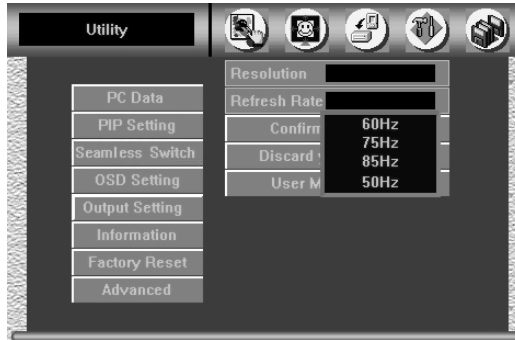
Figure 34: Output Setting Refresh Rate Utility Screen
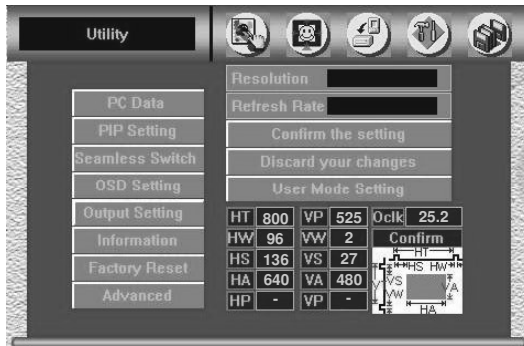
Figure 35: Output Setting User Mode Setting Utility Screen

Table 3: User Mode Setting Definitions

User Mode Setting Definitions
HT: Horizontal total
HW: Horizontal sync pulse width
HS: Horizontal active start point
HA: Horizontal active region
HP: Horizontal polarity
VT: Vertical total
VW: Vertical sync pulse width
VS: Vertical active start point
VA: Vertical active region
VP: Vertical polarity
OCLK: Output clock
Confirm: Confirm the action

8.4.7 Verifying Configuration Details via the Information Screen

From the Information screen (see Figure 36), you can verify the main source, PIP source, output mode, as well as the firmware version number:
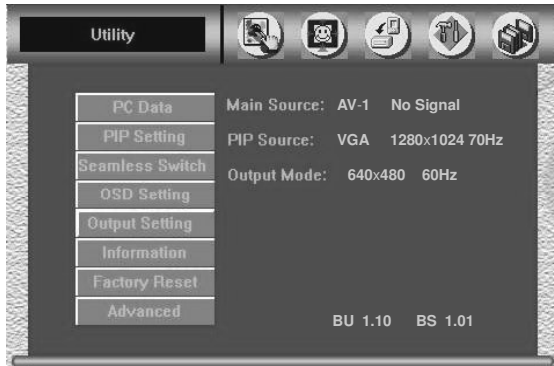
Figure 36: Information Screen

8.4.8 Choosing Factory Reset

From the Factory Reset Utility screen (see Figure 37), you can reset your **VP-740** to its preset default setting:
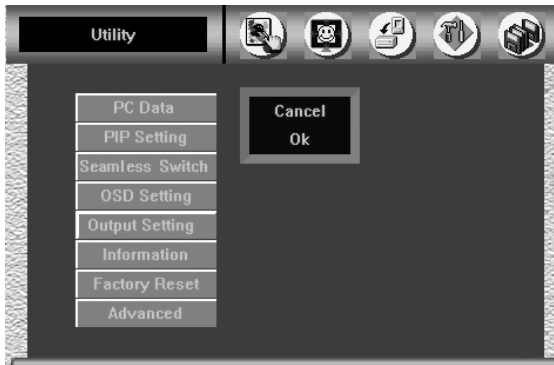
Figure 37: Factory Reset Screen

8.4.9 Choosing Advanced

From the Advanced screen, select the blank color[1], choose whether the start up logo will appear on screen, and set the Mode Define[2] parameters (see Figure 40).
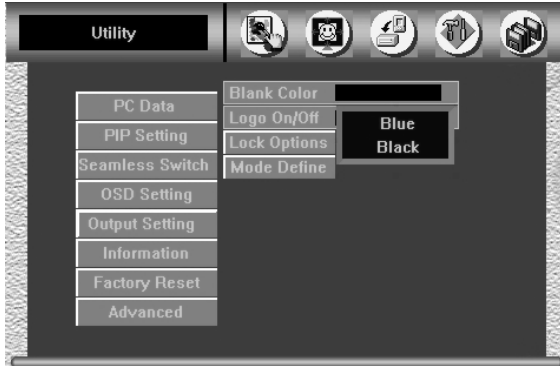
Figure 38: Advanced Screen

The Advanced screen also lets you set the panel lock options (see Figure 39). Set the Save option to On to keep the panel locked the next time the machine is powered up. Set the Input lock to Off so you can still use the SOURCE button on the front panel to select an active and connected source or to select an input using your IR remote transmitter.
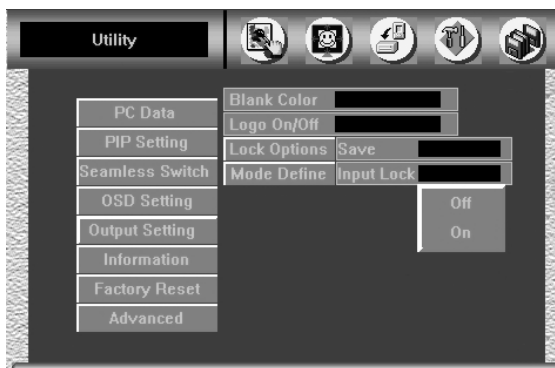
Figure 39: Advanced Screen – Lock Options

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1 The blank color is the screen color (black or blue) when there is no active source connected

2 Recommended for advanced users only – non-standard settings may not be recognized by the display device

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The Mode Define option includes the Save Mode, the Erase Mode[1] and the Measure Mode (see Figure 40). When the Measure mode is set to default, it measures and displays the parameters of the currently selected input (see Figure 40 and Table 4). When the Measure Mode is set to User Define, you can set the selected input to a non-standard resolution[2] and save it in the Save Mode[3] (or erase it in the Erase Mode later on).
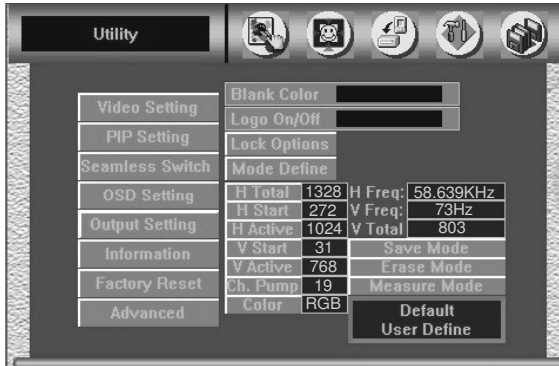
Figure 40: Advanced Screen –Mode Define

Table 4 defines the Mode Define features.

Table 4: Mode Define Features

User Mode Setting Definitions	
H Total	Horizontal Total
H Start	Horizontal active start point
H Active	Horizontal active region
V Start	Vertical active start point
V Active	Vertical active region
Ch. Pump	Charge pump current
Color	Color format
H Freq	Horizontal Frequency
V Freq	Vertical Frequency
Measure Mode	Select between Default and User Define
Save Mode	Save the user defined Main Source resolution
Erase Mode	Erase the user defined Main Source resolution

---

1 Save or Erase Resolution and frequency

2 When choosing Factory Reset (see section 8.4.8), the non-standard resolution resets to the default resolution setting

3 The non standard resolution appears on the Information screen as the Main Source resolution

8.5 Saving and Loading

You can store up to three separate adjustments: Setting 1, Setting 2, and Setting 3. Each adjustment can include alterations made via the image tuning settings (Brightness, Contrast, Saturation, Hue Sharpness, Gamma / Color, and/or Gray Correction) and/or alterations made via the aspect ratio settings (Anamorphic, Virtual Wide, Letterbox, Native, 4:3 Output, and/or User Define).

You can recall any adjustment by loading the appropriate setting from the Load Screen—Setting 1, Setting 2, or Setting 3—see Figure 43, or via the remote transmitter—Memory 1, Memory 2, or Memory 3—see Figure 44.

Figure 41: Save and Load Screen

Figure 42: Save Screen

Figure 43: Load Screen

8.6 Operating via the Infra-red Remote Control Transmitter

You can control the **VP-740** via the remote transmitter:
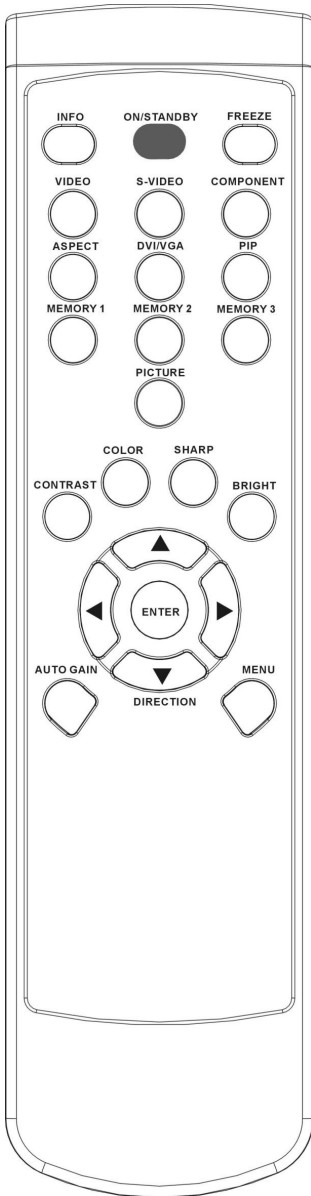
Table 5: VP-740 Remote Transmitter Functions

Keys	Function
INFO	Defines the main source, PIP source, output mode, as well as the firmware version number
ON/STANDBY	Cycles power
FREEZE	Freezes the output video image
VIDEO	Cycles between selecting the AV1 or AV2 source
S-VIDEO	Cycles between selecting the YC1 or YC2 source
COMPONENT	Cycles between selecting the COMP.1 or COMP.2 source
ASPECT	Toggles between each of the following Aspect Ratios (see Figure 15 to Figure 19 inclusive): Anamorphic (displays the aspect ratio (usually 16:9)), Virtual Wide (anamorphic plus non-linear scaling), Letterbox (the vertical line is expanded to full screen—it is assumed that there are two bands of black, top and bottom of the screen), Native (lets you set the native resolution according to the specifications of the Plasma screen or projector), 4:3 Output (the width to height ratio is 4:3), User Define
DVI/VGA	Cycles between selecting the DVI or VGA source
PIP	Selects the PIP function (see section 7.1)
MEMORY 1	Loads Setting 1
MEMORY 2	Loads Setting 2
MEMORY 3	Loads Setting 3
PICTURE	Toggles between each of the following modes: Normal (average setting), Presentation (higher black level), Cinema (higher white balance)
CONTRAST	Displays the contrast adjustment window
COLOR	Displays the saturation adjustment window
SHARP	Displays the sharpness adjustment window
BRIGHT	Displays the brightness adjustment window
DIRECTION (5 separate keys)	Maneuver within an OSD screen and/or resize the PIP via the Up and Down DIRECTION keys (when the Label is ON and the PIP is enclosed by an orange frame (see section 7.1)) and/or move the PIP (when the Label is OFF and the PIP is not enclosed by an orange frame (see section 7.1))
AUTO GAIN	Automatically adjusts the brightness and contrast
MENU	Displays the OSD Menu screen (as Figure 8 illustrates) and locks/unlocks the front panel

Figure 44: Remote Transmitter

9 Technical Specifications

Table 6 includes the technical specifications[1]:

Table 6: Technical Specifications of the VP-740

INPUTS:	2 x CV on RCA connectors; 2 x YC 4p connectors; 2 x RGBHV/YUV on RCA connectors; 1 x VGA/UXGA on an HD15F connector; 1 x DVI-D connector (not HDCP compliant), 1 x RS-232 on DB-9 connector
OUTPUTS:	1 x DVI-D connector (not HDCP compliant) ; 1 x RGBHV/YUV on BNC connectors
SIGNAL FORMAT:	Video: NTSC / NTSC4.43 / PAL / PAL-M / PAL-N / PAL-60, SECAM HDTV: 480i/480p, 540p, 576i/576p, 720p & 1080i as well as user defined Graphics: VGA, SVGA, XGA, SXGA, UXGA, Mac, SUN
SCANNING FREQUENCY:	Pixel clock 170MHz Horizontal 15.63 ~ 91kHz, auto/manual select Vertical 50 ~ 100Hz, auto/manual select
FEATURES:	Display aspect ratio 16:9, 4:3, Anamorphic, Letter Box, Film-mode Detection 3:2/2:2 Pull-Down Recovery; Y/C separation 3D Y/C Comb Filter; Picture-in-Picture Graphic-on-Video, Video-on-Graphic; Any size, Any location, Direct Swap; Image Parameters Factory-defined x 3 sets; User-definable x 3 sets per channel
CONTROLS:	Front panel, OSD, IR remote control, RS-232
POWER SOURCE:	Input voltage 90 ~ 240Vac +/- 10%, 50/60 Hz; 40VA
DIMENSIONS:	VP-740: 48.2cm x 23.6cm x 4.4cm (19" x 9.3" x 1.72") W, D, H VP-740 ScaleMagix™: 43.2cm x 27cm x 7cm (17" x 10.63" x 2.76") W, D, H.
Weight:	VP-740: 3.35kg. (7.4lbs.) approx. VP-740 ScaleMagix™: 4.00kg (8.8lbs.) approx.
Accessories:	Power cord, Null-modem adapter and infra-red remote control transmitter

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1 Specifications are subject to change without notice

Table 7: Technical Specifications of the VP-740 (Input Signal – VGA)

Sync Type Support		RGBHV, RGBHs, RGsB (not supported)	
RGB Signal	**Resolution**	**Vertical Frequency (Hz)**	**Horizontal Frequency (KHz)**
640x480	640x480	60	31.469l
	640x480	67	35.0001
	640x480	72	37.861l
	640x480	75	37.500l
	640x480	85	43.269l
720x400	720x400	70	31.469l
	720x400	85	37.92
800x600	800x600	56	35.156l
	800x600	60	37.879l
	800x600	72	48.077
	800x600	75	46.875l
	800x600	85	53.674l
832x624	832x624	75	49.7001
1024x800	1024x800	84	70.8401
1024x768	1024x768	60	48.363l
	1024x768	70	56.476l
	1024x768	75	60.200l
	1024x768	85	68.677l
1152x864	1152x864	75	67.500l
1152x870	1152x870	75	68.700l
1152x900	1152x900	66	61.846l
	1152x900	76	71.808l
1280x960	1280x960	60	60.000l
	1280x960	85	85.938l
1280x720	1280x720	60	
1280x1024	1280x1024	60	63.981l
	1280x1024	75	79.976l
	1280x1024	76	81.130l
	1280x1024	85	91.146l
1400x1050	1400x1050	60	66.000l
	1400x1050	70	77.000l
	1400x1050	72	79.200l[1]
	1400x1050	75	82.500l[1]
	1400x1050	85	93.500l[1]
1600x1200	1600x1200	60	75.000l[1]
	1600x1200	70	87.500l[1]
	1600x1200	75	93.750l[1]
	1600x1200	85	106.250l[1]
1080l	1920x540	60	33.6701
720P	1280x720	60	45.363l
480P	720x483	60	31.469l
576P	720x576	50	31.256l
1024x576	1024x576	60	44.000l
	1024x576	72	58.890l

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1 Quality is not optimal, as its sample frequency is over ADC Spec

Table 8: Technical Specifications of the VP-740 (Input Signal – DVI)

DVI Signal	Resolution	Vertical Frequency (Hz)	Horizontal Frequency (KHz)
640x480	640x480	60	31.469I
	640x480	67	35.0001
	640x480	72	37.861I
	640x480	75	37.500I
	640x480	85	43.269I
720x400	720x400	70	31.469I
	720x400	85	37.92
800x600	800x600	56	35.156I
	800x600	60	37.879I
	800x600	72	48.077
	800x600	75	46.875I
	800x600	85	53.674I
832x624	832x624	75	49.7001
1024x800	1024x800	84	70.8401
1024x768	1024x768	60	48.363I
	1024x768	70	56.476I
	1024x768	75	60.200I
	1024x768	85	68.677I
1280x960	1280x960	60	60.000I
1280x720	1280x720	60	
1280x1024	1280x1024	60	63.981I
720P	1280x720	60	45.363I
480P	720x483	60	31.469I
576P	720x576	50	31.256I
1024x576	1024x576	60	44.000I
	1024x576	72	58.890I
* DVI Chip max clock rate 110Mhz			

Table 9: Technical Specifications of the VP-740 (Input Signal – HDTV)

HDTV Mode (YPbPr)		1080I, 720P, 480P, 576P, 1024x576P	
DVI Signal	Resolution	Vertical Frequency (Hz)	Horizontal Frequency (KHz)
1080I	1920x540	60	33.6701
720P	1280x720	60	45.363I
480P	720x483	60	31.469I
576P	720x576	50	31.256I
1024x576P	1024x576	50	31.256I

Table 10: Technical Specifications of the VP-740 (Output Signal – RGB / DVI Mode)

RGB Mode	Resolution	Vertical Frequency (Hz)	Horizontal Frequency (KHz)
640x480	640x480	60	31.469l
	640x480	75	37.500l
	640x480	85	43.269l
720x400	720x400	70	31.469l
	720x400	85	37.92
800x600	800x600	60	37.879l
	800x600	75	46.875l
	800x600	85	53.674l
852x480	852x480	60	
1024x768	1024x768	60	48.363l
	1024x768	75	60.200l
	1024x768	85	68.677l
1280x720	1280x720	60	
1280x1024	1280x1024	60	63.981l
	1280x1024	75	79.976l
1366x768	1366x768	60	
1400x1050	1400x1050	60	66.000l
1600x1200	1600x1200	60	75.000l
1080I	1920x540	60	33.670l[1]
720P	1280x720	60	45.363l[1]
480P	720x483	60	31.469l[1]
576P	720x576	50	31.256l[1]
User Mode			H,V Timing User Adjustable

1 RGB

10 VP-740 Communication Protocol

Set and Get command:

Set Command: Y■Control_Type■Function■Param■CR

■ **Reply**: Z■Control_Type■Function■Param■CRDone>CR

Get Command: Y■Control_Type■Function■Param■CR

■**Reply**: Z■Control_Type■Function■Param■CR

Example:

1. "Y■ 1■0■32■CR" -> set Contrast value as 32
   "Z■1■0■32■CR>" --> command setting success

2. "Y■10■5■CR" -> get current output resolution
   "Z■10■5■2■CR>" --> current resolution is 1024x768

3. "Y■0■35■CR" -> Keypad/Remote controller set Menu ON/Off
   "Z■0■35■CR>"-->command setting success

Definition:

■: ASCII Code 0x20

CR: Ascii Code 0xD or 0xA

After set type Command setting, system will respond a string as ">"

Command set type:

0: Key Set

1: ValueSlider Set 2: ValueSlider Get

3: RadioGroup Set 4: RadioGroup Set

5: TextButton Set

6: Remote Control (Hotkey) Set

Table 11: RS-232 Protocol

Control Type	Function	Param (for Set)	Function Description		Comment
0	0	N/A	Information		
0	1	N/A	Power		
0	2	N/A	Freeze		
0	3	N/A	AV		
0	4	N/A	YC		
0	5	N/A	COMP		
0	6	N/A	VGA_DVI		

Control Type	Function	Param (for Set)	Function Description		Comment
0	7	N/A	ASPECT		
0	8	N/A	PIP		
0	9	N/A	Memory1		
0	10	N/A	Memory2		
0	11	N/A	Memory3		
0	12	N/A	Picture		
0	13	N/A	Contrast		
0	14	N/A	Color		
0	15	N/A	Sharpness		
0	16	N/A	Brightness		
0	17	N/A	Up		
0	18	N/A	Left		
0	19	N/A	Enter		
0	20	N/A	Right		
0	21	N/A	Down		
0	22	N/A	Menu		
0	23	N/A	Auto Gain		
0	24	N/A	Source		
1: Set 2: Get	0	-32~32	Brightness		
1: Set 2: Get	1	-32~32	Contrast		
1: Set 2: Get	2	-32~32	Saturation		
1: Set 2: Get	3	-32~32	Hue		
1: Set 2: Get	4	-8~8	Sharpness		
1: Set 2: Get	5	-10~10	Gamma		
1: Set 2: Get	6	-32~32	Color Temp		
1: Set 2: Get	7	-32~32	Red		
1: Set 2: Get	8	-32~32	Green		
1: Set 2: Get	9	-32~32	Blue		
1: Set 2: Get	10	-32~32	Yellow		
1: Set 2: Get	11	-32~32	Dark Red		
1: Set 2: Get	12	-32~32	Dark Blue		
1: Set 2: Get	13	-32~32	Light Red		
1: Set 2: Get	14	-32~32	Light Blue		

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Control Type	Function	Param (for Set)	Function Description		Comment
1: Set 2: Get	15	-64~64	Zoom-H-Pan		
1: Set 2: Get	16	-64~64	Zoom-V-Pan		
1: Set 2: Get	17	-32~32	LetterBox-Pan		
1: Set 2: Get	18	-32~32	4:3Output Shift		
1: Set 2: Get	19	-32~32	User Define H-Zoom		
1: Set 2: Get	20	-32~32	User Define V-Zoom		
1: Set 2: Get	21	-32~32	User Define H-Pan		
1: Set 2: Get	22	-32~32	User Define V-Pan		
1: Set 2: Get	23	-32~32	KeyStone Angle		
1: Set 2: Get	24	-127~127	PC Data: H-Position		
1: Set 2: Get	25	-64~64	PC Data: V-Position		
1: Set 2: Get	26	-64~64	PC Data: Frequency		
1: Set 2: Get	27	-16~16	PC Data: Phase		
1: Set 2: Get	28	-32~32	PC Data: Blue Offset		
1: Set 2: Get	29	-32~32	PC Data: Red Offset		
1: Set 2: Get	30	-15~15	Video: H-Position		
1: Set 2: Get	31	NTSC: -10~10 PAL:-19~19	Video: V-Position		
1: Set 2: Get	32	-16~16	Video: Noise Reduction		
1: Set 2: Get	33	-4~3	Video: Chroma Delay		
1: Set 2: Get	34	-32~32	Video: Cb		Y Cb Cr input only
1: Set 2: Get	35	-32~32	Video: Cr		Y Cb Cr input only
1: Set 2: Get	36	-32~32	PIP Setting: H-Postion		
1: Set 2: Get	37	-32~32	PIP Setting: V-Position		
1: Set 2: Get	38	0~255	PIP Setting: User Define H-Size		

Control Type	Function	Param (for Set)	Function Description		Comment
1: Set 2: Get	39	0~255	PIP Setting: User Define V-Size		
1: Set 2: Get	40	-32~32	OSD Setting: H-Position		
1: Set 2: Get	41	-32~32	OSD Setting: V-Position		
1: Set 2: Get	42	3~60	OSD Setting: OSD TimeOut		
3: Set 4: Get	0	0~10	Zoom Setting: Zoom Ratio	0: Off 1: 150% 2: 200% 3: 225% 4: 250% 5: 275% 6: 300% 7: 325% 8: 350% 9: 375% 10: 400%	
3:Set 4:Get	1	0~4	Aspect Ratio: Native	0:Left+Up 1:Right+UP 2:Center 3:Left+Down 4:Right+Down	
3: Set 4: Get	2	0~7	Select Input Source	0: AV-1 1: AV-2 2: YC-1 3: YC-2 4: Component-1 5: Component-2 6: VGA 7: DVI	
3: Set 4: Get	3	0~2	PC Data: Color Format	0: Default 1: RGB 2: YUV	
3: Set 4: Get	4	0~2	Video Setting: Color Format	0: Default 1: RGB 2: YUV	
3: Set 4: Get	5	0~6	Video Setting: Video Standard	0: Video Standard - Auto 1: Video Standard - NTSC 2: Video Standard - NTSC 4.43 3: Video Standard - PAL 4: Video Standard - PAL-N 5: Video Standard - PAL-M 6: Video Standard - SECAM	
3: Set 4: Get	6	0~1	PIP Setting: PIP On/Off	0: Off, 1: On	

Control Type	Function	Param (for Set)	Function Description		Comment
3: Set 4: Get	7	0~7	PIP Setting: PIP Source	0: AV-1 1: AV-2 2: YC-1 3: YC-2 4: Component-1 5: Component-2 6: VGA 7: DVI	
3: Set 4: Get	8	0~5	PIP Setting: PIP Size	0: 1/25 1: 1/16 2: 1/9 3: 1/4 4: Split 5: User Define	
3: Set 4: Get	9	0~2	Seamless Switch	0: Fast 1: Moderate 2: Safe	
3: Set 4: Get	10	0~1	OSD Setting: Label On/Off	0:Off, 1:On	
3: Set 4: Get	11	0~1	Advanced Setting: Blank Color	0: Blue 1: Black	
3: Set 4: Get	12	0~1	Advanced Setting: Logo On/Off	0:Off, 1:On	
3: Set 4: Get	13	0~15	Output Resolution	0: 640x480 1: 800x600 2: 1024x768 3: 1280x1024 4: 1600x1200 5: 720x483 6: 1280x720 7: 1920x1080i 8: 852x480 9: 1366x768 10: 1365x1024 11: 1400x1050 12: 480P 13: 720P 14: 1080i 15: 576P 16: User Define	
3: Set 4: Get	14	0~2	Output Refresh Rate	0: 60Hz 1: 75Hz 2: 85Hz 3: 50Hz	
3: Set 4: Get	15	0~1	Factory Reset	0:Cancel, 1:ok	
3: Set 4: Get	16	0~1	Key Lock Save	0:Off, 1:On	
3: Set 4: Get	17	0~1	Input Lock	0:Off, 1:On	
3: Set 4: Get	18	0~1	Video Setting: Film Mode	0:Off, 1:On	New Mode
5	0	N/A	Aspect Ratio - Anamorphic		
5	1	N/A	Aspect Ratio - Virtual Wide		

Control Type	Function	Param (for Set)	Function Description	Comment
5	2	N/A	Aspect Ratio - Letterbox	
5	3	N/A	Aspect Ratio - Native	
5	4	N/A	Aspect Ratio - 4:3 Output	
5	5	N/A	Aspect Ratio - User Define	
5	6	N/A	Load Gamma/Color - Normal	
5	7	N/A	Load Gamma/Color - Presentation	
5	8	N/A	Load Gamma/Color - Cinema	
5	9	N/A	Load Gamma/Color - Setting1	
5	10	N/A	Load Gamma/Color - Setting2	
5	11	N/A	Load Gamma/Color - Setting3	
5	12	N/A	Save Gamma/Color - Setting1	
5	13	N/A	Save Gamma/Color - Setting2	
5	14	N/A	Save Gamma/Color - Setting3	
6: Set 7: Get	0	0~1	Power	0: Power Down 1: Power On
6: Set 7: Get	1	0~1	Freeze	0: Off 1: On
6: Set 7: Get	2	0~1	Key Lock	0: Off 1: On
8	0	N/A	"Resolution/Refresh Rate" Or "Video Stand"	example: "Y 8 0 CR" return: "Z 8 0 1080i CR"

LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for seven years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed.
3. Damage, deterioration or malfunction resulting from:
   i)   Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
   ii) Product modification, or failure to follow instructions supplied with the product
   iii) Repair or attempted repair by anyone not authorized by Kramer
   iv) Any shipment of the product (claims must be presented to the carrier)
   v)   Removal or installation of the product
   vi) Any other cause, which does not relate to a product defect
   vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

This equipment has been tested to determine compliance with the requirements of:

EN-50081:	"Electromagnetic compatibility (EMC);
	generic emission standard.
	Part 1: Residential, commercial and light industry"
EN-50082:	"Electromagnetic compatibility (EMC) generic immunity standard.
	Part 1: Residential, commercial and light industry environment".
CFR-47:	FCC Rules and Regulations:
	Part 15: "Radio frequency devices
	Subpart B – Unintentional radiators"

CAUTION!

⊠ Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
⊠ Use the supplied DC power supply to feed power to the machine.
⊠ Please use recommended interconnection cables to connect the machine to other components.

![Kramer logo]

For the latest information on our products and a list of Kramer distributors, visit our Web site: www.kramerelectronics.com, where updates to this user manual may be found. We welcome your questions, comments and feedback.

| ⚠ **Caution** | **Safety Warning**: Disconnect the unit from the power supply before opening/servicing. |